

**In the Claims:**

1. (Currently Amended) An instrumented prosthetic foot for use with an actuated leg prosthesis controlled by a controller, the instrumented prosthetic foot comprising:

[[An]] an elongated body having a top and a bottom part;

a connector to connect the instrumented prosthetic foot to the leg prosthesis; and

~~at least one sensor positioned~~ a pair of sensors interposed between the connector and the top part of the elongated body[[;]] and positioned side by side, ~~the at least one sensor transmitting signals indicative of changes in weight distribution along the foot to the controller~~ the pair of sensors being configured to measure the pressure force on the connector;

~~wherein in operation the at least one sensor is the only element interposed between the connector~~ is mounted to [[and]] the top part of the elongated body via the pair of sensors.

2. (Previously Presented) An instrumented prosthetic foot according to claim 1, wherein:

the bottom part of the elongated body includes a pair of basic underfoot locations, the first region corresponding to the heel area of the human foot and second region corresponding to the toe area of the human foot.

3. (Currently Amended) An instrumented prosthetic foot according to claim 2, wherein:

~~at least two sensors are provided, one of the sensors being~~ a sensor of the pair of sensors is associated with each basic underfoot locations of the elongated body.

4. (Previously Withdrawn)

5. (Previously Withdrawn)

6. (Previously Presented) An instrumented prosthetic foot according to claim 3, wherein:

the sensors associated with each basic underfoot locations of the elongated body are load cells.

7. (Previously Withdrawn)

8. (Previously Withdrawn)

9. (Previously Cancelled)

10. (Previously Withdrawn)

11. (Previously Withdrawn)

12. (Previously Withdrawn)

13. (Previously Withdrawn)

14. (Previously Withdrawn)

15. (Previously Withdrawn)

16. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:

the ~~at least one sensor~~ pair of sensors transmits signals to the controller using a wired connection.

17. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:

the ~~at least one sensor~~ pair of sensors transmits signals to the controller using a wireless connection.

18. (Original) An instrumented prosthetic foot according to claim 1, wherein:

the connector removably connects the instrumented prosthetic foot to the leg prosthesis.

19. (Currently Amended) An instrumented prosthetic foot according to claim 3, wherein:  
~~the first and second sensors are positioned side by side, the~~ a first sensor of the pair of sensors being ~~generally~~ biased towards the heel region of the elongated body and ~~[[the]]~~ a second sensor of the pair of sensors being ~~generally~~ biased towards the toe region of the elongated body.
20. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:  
~~the at least one sensor~~ pair of sensors transmits signals to the controller using an optical interface.
21. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:  
~~the at least one sensor~~ pair of sensors includes a load cell.
22. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:  
~~the at least one sensor~~ pair of sensors includes a strain gauge.
23. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:  
~~the at least one sensor~~ pair of sensors includes a pressure sensor.
24. (Currently Amended) An instrumented prosthetic foot according to claim 1, wherein:  
~~the at least one sensor~~ pair of sensors includes a force sensing resistor.
25. (New) An instrumented prosthetic foot system for use with an actuated leg prosthesis, the system comprising  
  
an instrumented foot comprising an elongated body having a top and a bottom part and a toe and a heel region; a connector to connect the instrumented prosthetic foot to the leg prosthesis; and a pair of sensors interposed between the connector and the elongated body top part for measuring the pressure force on the connector, and

a controller for receiving data relative to the pressure force on the connector from the pair of sensors and for determining the torque between the elongated body top part and the connector using the received data.

26. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the controller further determines the pressure force on the toe and the heel region of the elongated body using the received data.

27. (New) An instrumented prosthetic foot system according to claim 26, wherein:

a first sensor of the pair of sensors being biased towards the heel region of the elongated body and a second sensor of the pair of sensors being biased towards the toe region of the elongated body.

28. (New) An instrumented prosthetic foot system according to claim 27, wherein the controller determines the torque via the following equation:

$$M = F_{\text{HEEL}} \cdot L_{\text{S\_HEEL}} - F_{\text{TOE}} \cdot L_{\text{S\_TOE}};$$

where

$F_{\text{HEEL}}$  is the data relative to the pressure force measured by the first sensor of the pair of sensors;

$L_{\text{S\_HEEL}}$  is the distance between the center of the connector and the center of the first sensor of the pair of sensors;

$F_{\text{TOE}}$  is the data relative to the pressure force measured by the second sensor of the pair of sensors; and

$L_{\text{S\_TOE}}$  is the distance between the center of the connector and the center of the second sensor of the pair of sensors.

29. (New) An instrumented prosthetic foot system according to claim 28, wherein the controller determines the pressure force on the toe and the heel region of the elongated body via the following equation:

$$F_{TOE} = (M + ((F_{S1} + F_{S2}) \cdot L_{HEEL})) / (L_{HEEL} + L_{TOE});$$

$$F_{HEEL} = (-M + ((F_{S1} + F_{S2}) \cdot L_{TOE})) / (L_{HEEL} + L_{TOE});$$

where

$F_{TOE}$  is the pressure force on the toe region of the elongated body;

$F_{HEEL}$  is the pressure force on the heel region of the elongated body;

$M$  is the torque;

$L_{TOE}$  is the distance between the center of the connector and the center of the toe region;  
and

$L_{HEEL}$  is the distance between the center of the connector and the center of the heel region.

30. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors transmits signals to the controller using a wired connection.

31. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors transmits signals to the controller using a wireless connection.

32. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the connector removably connects the instrumented prosthetic foot to the leg prosthesis.

33. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors transmits signals to the controller using an optical interface.

34. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors includes a load cell.

35. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors includes a strain gauge.

36. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors includes a pressure sensor.

37. (New) An instrumented prosthetic foot system according to claim 25, wherein:

the pair of sensors a force sensing resistor.